

**METHOD OF PREDICTION OF IN-VIVO POLYMER
PERFORMANCE BY EXTERNAL EXPERIMENTATION**

Abstract

5 A method is disclosed of using external polymeric analytical techniques
to predict in-vivo polymeric performance, more particularly, viscoelastic
property characterization for performance modeling of bio-medical devices that
incorporate a polymeric component and are load-bearing during service. Time-
Temperature Superposition can be used to accelerate external testing of
pertinent properties. Boltzmann's superposition provides a mathematical
10 methodology for determining the time-dependent strain that develops in
response to an imposed stress history. The modeling of the present invention
provides an opportunity to describe and predict behavior of the device during
in-vivo service, as well as it providing a basis for evaluating alternate
"candidate" polymers for use in the construction of the device.

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